UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,751	10/09/2003	Nicholas Haan	66347-097	8133

7590 01/08/2007

Dykema Gossett, PLLC
Franklin Square
3rd Floor West
1300 I Street NW
Washington, DC 20005-3306

EXAMINER	
FORMAN, BETTY J	
ART UNIT	PAPER NUMBER
1634	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/681,751	HAAN, NICHOIAS	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 16 October 2006 in which claims 24-26, 28, 32-33 were amended and the previous rejections were traversed. Applicant's arguments have been thoroughly reviewed and are discussed below.

The previous objections and rejections in the Office Action dated 17 August 2006, reiterated below are maintained.

Claims 22-35 are under prosecution.

Claim Objections

2. Claims 23-35 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 23-25 and 32-33 are drawn to the data or information received by the receiving means of Claim 22. Claims 26-31 and 34-35 are drawn to the means for modeling of Claim 22 and define an intended use for the modeling means e.g. to define sub-models. The data does not further define any structural component of the apparatus of Claim 22. The modeling means, as defined in the specification, comprises data structures, mathematical algorithms and data manipulation. The means do not result in any functional or structural interrelationship or produce a concrete, tangible and useful result. Therefore, the means do not further limit the apparatus of Claim 22.

> ii) Computer-Related Processes Limited to a Practical Application in the Technological Arts
> There is always some form of physical transformation within a computer because a computer acts on signals and transforms them during its operation and changes the state of its components during the execution of a process. Even though such a physical transformation occurs within a computer, such activity is not determinative of whether the process is statutory because such transformation alone does not distinguish a

statutory computer process from a nonstatutory computer process. What is determinative is not how the computer performs the process, but what the computer does to achieve a practical application. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036.

A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In Sarkar, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:

> No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See Alappat, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting Diamond v. Diehr, 450 U.S. at 192, 209 USPQ at 10). See also Alappat 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing O 'Reilly v. Morse, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See AT &T, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in State Street, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557 (*> en< banc). For example, **a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory.** However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory. (MPEP, 2106 IV, 2, ii).

Response to Arguments

3. Applicant traverses the object because the invention is drawn to an apparatus, not a process as discussed in the above objection. Applicant describes the dependent claims as follows: "claim 23 specifies that the data comes from two channels; and claims 24, 25, 32, and 33 specify in such apparatus the specific type of data being modeled and analyzed." From this Applicant states, "the invention is not a computer process that simply calculates a mathematical algorithm that models something. It is an apparatus that analyzes images and,

in doing so, employs means for modeling something. That something, as broadly stated in the independent claim, is modeling the process."

Applicant's comments are noted. As stated in the above object and in Applicant's comments, the claims define uses for the apparatus of Claim 22 e.g. where data comes from and type of data analyzed. The claims do not define structural components that further limit the apparatus of Claim 22. Neither the source of data nor the type of data analyzed define structural components of the apparatus. Hence, claims which describe the data source or type do not further limit the apparatus.

Applicant further asserts that it is not improper to specify a feature being modeled. The assertion is noted. However, the issue at hand is that the data source and data analysis does not further define or limit the structure. A recitation of intended use is not improper. It is objected to in this instance because the claims do not contain further elements so as to further limit the structure of the apparatus.

35 USC § 112, sixth paragraph

4. The claims are written in means-plus-function language. The MPEP § 2106, II, C provides guidance in claim interpretation.

> Where means plus function language is used to define the characteristics of a machine or manufacture invention, claim limitations must be interpreted to read on only the structures or materials disclosed in the specification and "equivalents thereof." (Two en banc decisions of the Federal Circuit have made clear that the Office is to interpret means plus function language according to 35 U.S.C. 112, sixth paragraph. In the first, In re Donaldson, 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994), the court held:
> The plain and unambiguous meaning of paragraph six is that one construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure. Paragraph six does not state or even suggest that the PTO is exempt from this mandate, and there is no legislative history indicating that Congress intended that the PTO should be. Thus, this court must accept the plain and precise language of paragraph six.

5. The instant specification broadly defines the claimed means at (page 5, line 31-page 6, line 16) such that the means for receiving data encompasses a device for receiving a data image, the means for modeling and means for comparing are processor configured for receiving and analyzing the received data and the means for outputting the information as a display or data recorder.

As stated above, the type of data and/or information received and/or used along with the use of the modeling means do not further define the means for receiving, means for modeling and means for comparing.

Response to Comments

6. The above discussion is not a rejection. The examiner apologizes for any confusion regarding the discussion. The discussion details interpretation of the means-plus-function language in the claims. The citation of 35 U.S.C. 112, is provided to clarify the basis for the interpretation.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 22-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Stoughton et al (U.S. Patent No. 6,132,969, issued 17 October 2000).

Regarding Claims 22-35, Stoughton et al disclose an apparatus for analyzing microarray images (Abstract), the apparatus comprising means for receiving data from a microarray from a DNA microarray having gene expression information (e.g. multi-channel image detector, Column 50, line 40-Column 51, line 36), means for modeling the microarray (e.g. computer, programs and software configured for receiving and analyzing the received data (Column 54, line 4-Column 57, line 40), and the means for outputting the information (e.g. computer display and/or data recorder (Column 54, lines 20-32). Stoughton et al further disclose the apparatus comprising various algorithms for analysis of signals and data from the microarray and computer software utilizing the data for modeling parameters § 5.1-5.6).

Response to Arguments

9. Applicant asserts that Stoughton is concerned with processes different from those claimed. Applicant asserts that Stoughton does not teach use of models/algorithms to improve image analysis and increase accuracy. Applicant further asserts that Stoughton merely provides a general description of two microarray experiments, but does not provide any indication of how one could use models/algorithms to improve image analysis. The arguments have been considered but are not found persuasive because the claims are drawn to an apparatus using means-plus-function language. As stated above, the means are interpreted as defined in the specification. The recitations of functionality do not further define or limit the structural components of the claimed apparatus. Furthermore, Applicant has not pointed to any further structures required by the functionality. The courts have stated that means-plus-function limitations are interpreted in light of the specification to cover the structures as defined the specification. As such, the claims are interpreted as discussed above in ¶ 5.

In re Donaldson, 29 USPQ2d 1845 (Fed.Cir.1994), states:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without recital of structure, material, or acts in support

thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof.

10. Claims 22-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Friend et al (U.S. Patent No. 7,013,221, filed 28 April 2000).

Regarding Claims 22-35, Friend et al disclose an apparatus for analyzing microarray images (§ 5.2-5.3.6), the apparatus comprising means for receiving data from a microarray from a DNA microarray having gene expression information (e.g. multi-channel image detector, Column 50, line 11-Column 51, line 57), means for modeling the microarray (e.g. computer, programs and software configured for receiving and analyzing the received data (Column 41, line 44-Column 45, line 67), and the means for outputting the information (e.g. computer display and/or data recorder (Column 51, lines 24-38). Friend et al further disclose the apparatus comprising various algorithms for analysis of signals and data from the microarray and computer software utilizing the data for modeling parameters § 5.1.2).

Response to Arguments

11. Applicant asserts that Friend does not provide information on how to improve image analysis but uses the models/algorithms for an entirely different purpose than that claimed. The arguments have been considered but are not found persuasive because the claims are drawn to an apparatus using means-plus-function language. As stated above, the means are interpreted as defined in the specification. The recitations of functionality do not further define or limit the structural components of the claimed apparatus. Furthermore, Applicant has not pointed to any further structures required by the functionality. The courts have stated that means-plus-function limitations are interpreted in light of the specification to cover the structures as defined the specification. As such, the claims are interpreted as discussed above in ¶ 5.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

13. No claim is allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the

number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
December 29, 2006